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AUTHOR Toteff, Sally; Zehner, Cheri

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ABSTRACT

This guide is designed to help individuals make responsible decisions about safe use and disposal of household products. It consists of eight sections dealing with: (1) hazardous chemicals in the home, how hazaradous products become hazardous waste, and whether a hazardous waste problem exists in Puget Sound; (2) which household wastes are hazardous; (3) household hazardous waste routes in King County (Washington); (4) hazardous household products (considering solvents, pesticides and herbicides, automotive wastes, and household cleaners); (5) safety considerations when working with hazardous products; (6) disposal recommendations; (7) what individuals and neighborhood groups can do about household hazardous wastes; and (8) various resources, including energy organizations, federal agencies, other government agencies (state, local, and regional), citizen groups, and environmental organizations. (JN)

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Toward Hazardless Waste!

A Guide for Safe Use and Disposal of Hazardous Household Products

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Toward Hazardless Waste

A Guide for Safe Use and Disposal of Hazardous Household Products

Sally Toteff
Water Quality Division
Municipality of Metropolitan Seattle

Cheri Zehner
Environmental Health Specialist
Seattle-King County Department of Public Health

September 1985

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Jointly produced by the Municipality of Metropolitan Seattle and the Seattle-King County Department of Public Health in cooperation with the Household Hazardous Waste Disposal Committee, the Toxicant Task Force of Metro's Citizens' Water Quality Advisory Committee and the Environmental Intern Program.

Seattle — King County
Department of Public Health

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Foreword and Acknowledgements

You don't have to look far to find everyday household products that contain hazardous chemicals. They are under the sink, in the garage or out in the garden shed. Weed killers, garden pesticides, paint and paint thinner, wood preservatives, used motor oil, antifreeze, degreasers as well as stain removers, furniture polishes and disinfectants contain chemicals that even in small amounts often are hazardous to humans, fish and wildlife.

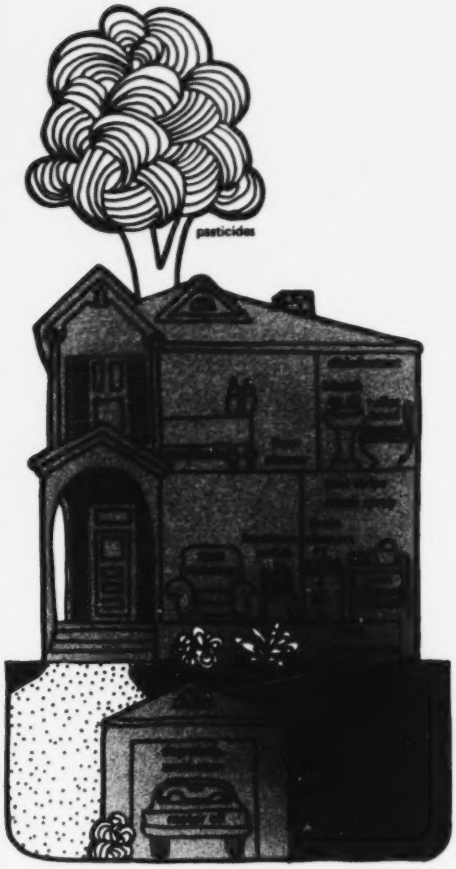
Every day, literally tons of these chemicals are washed down drains or dumped in the trash. No longer can we take the attitude of "out of sight, out of mind" toward these products. Household hazardous wastes can be a source of problem toxicants in local waters and landfills.

This booklet was designed to help you make responsible decisions about safe use and disposal of household products. Moreover, this guide supplies you with the information needed to recognize substances that pose hazards and help you make informed choices at the marketplace.

Without the sponsorship and encouragement of the interagency Household Hazardous Waste Committee, made up of governmental agencies, private businesses, environmental and public interest groups and concerned citizens, this booklet would still be only an idea. They deserve our sincere thanks. We would also like to recognize the Toxicant Task Force of Metro's Citizens' Water Quality Advisory Committee for their dedication and commitment in reviewing numerous drafts and offering detailed suggestions. Other individuals we would like to acknowledge for their enthusiasm and editorial support are Tizzy Bennett, Seattle Poison Center; Dave Galvin, Metro Water Quality Division; and Jeannie Summerhayes, State Office of Environmental Education.

Sally Toteff
Metro Water Quality Division Intern
Environmental Intern Program/NW

Cheri Zehner
Environmental Health Specialist
Seattle-King County Department of Public Health



Section 1: Are There Hazardous Chemicals In My Home?

Hazardous Chemicals In Your Home

Remember how your hands itched after you refinished that table, the fumes when you opened that last bottle of ammonia, or that queasy feeling you got while painting the basement bedroom?

Everyone uses hazardous chemical products. Your cleaning cabinet, home workshop or garden shed probably contain products that are toxic and can be hazardous to health and the environment.

These products include: spot removers, furniture polish, room deodorizers and disinfectants; used motor oil, brake fluid and antifreeze; paint, paint thinner, wood preservatives and paint strippers; weed killer, flea powder and garden pesticides.

The chemicals in these products can be dangerous if they are not used in the way they are intended. Hazardous chemicals can poison you, burn your skin and eyes and cause respiratory problems.

You don't have to stop using chemical products, but you should know how to use them and dispose of them as safely as possible.

How Hazardous Products Become Hazardous Waste

Sooner or later that half-used can of paint or old box of rat poison must be discarded, or that rusted can of engine cleaner and grandpa's ancient collection of pesticides might be targeted for your next spring cleanup.

Once you have no further use for a hazardous product it becomes hazardous waste. When drained motor oil or grandpa's DDT are rinsed down storm or street drains they go directly into lakes, streams or bays. If they are thrown in the trash they end up at sanitary landfills that are not equipped for them. These chemicals may seep into groundwater.

For years people have haphazardly disposed of household hazardous wastes by pouring them down the drain, tossing them in the trash or burying them in the backyard. This continuous release of small amounts of hazardous waste can eventually create a big problem.

Even though you may use only a tiny amount of a hazardous product, it combines with the waste of the other 173,000 households in King County. The wastes concentrate in one location (such as a sanitary landfill or central sewage treatment plant) to add up to a significant problem. The thousands of gallons of toxic substances sent to landfills can eventually accumulate in the soil and leach into local groundwater. And not all of the toxicants flushed down the sewer can be successfully treated at the sewage treatment plants.

The nonbiodegradable toxic chemicals in our household waste can harm plants, animals and eventually humans when the chemicals get into local groundwater, rivers, lakes or Puget Sound.

Is There A Hazardous Waste Problem in Puget Sound?

The health of Puget Sound is critical to King County's quality of life and economic well-being. The sound's current water quality shows serious signs of toxic contamination such as diseased bottom fish, poisoned sand fleas and bacteria in shellfish. Because of early recognition of these pollution problems, however, irrevocable damage can be avoided.

People rely on the sound to absorb and process many of their wastes, but it has only a limited capacity to dilute, transport and process waste products.

Pollution in the sound is centered near densely populated areas. Sediments in these areas contain elevated levels of toxic substances. Much of this contamination was thought to be from past activities, but large amounts of toxicants are still being introduced.

Polluters are not just from "point sources" such as industrial and municipal outfalls. "Non-point sources" such as households, recreational and commercial boating, businesses whose small sizes exempt them from regulation, and water runoff from streets and parking lots also contribute to pollution.

Puget Sound's water quality problems result from everyday decisions and actions by individuals, private companies and government. By your social and economic choices you have some control over how much pollution enters the sound. You can also assert control by disposing of your household hazardous wastes properly.

Section 2: Which Household Wastes Are Hazardous?

What Is Household Hazardous Waste?

Household hazardous waste is any discarded household material that may pose a substantial threat or potential hazard to human health or the environment when handled improperly. These wastes can be solids, liquids, sludges or containerized gases. They differ from other household waste because they meet one or more of the following characteristics:

- **Corrosive.** Wastes that eat away materials and living tissue by chemical action (oven and toilet bowl cleaners).
- **Toxic.** Wastes that, when improperly managed, pose a hazard to human health or the environment (pesticides, PCBs, heavy metals).
- **Ignitable.** Ignitable wastes present a fire hazard because they undergo spontaneous combustion at relatively low temperature (paint removers, organic solvents such as acetone, toluene and gasoline).
- **Reactive.** The tendency of a substance to create a vigorous reaction with air, water or other substances, resulting in explosions and the generation of toxic fumes (wastes from the chemical industry).

Such wastes present two types of hazards:

- **Acute** hazard—the potential for a substance to cause immediate harm to human health and the environment. Examples include materials that are explosive, caustic or corrosive.
- **Chronic** hazard—the potential for a substance to slowly cause harm to human health or the environment through repeated exposure over an extended period. Very low doses of some chemicals over a long time are hazardous. Examples include smoke from cigarettes and other cancer-causing agents. Or the slow degradation of a lake or stream from small amounts of toxicants dumped down a storm drain over time.

How Many Hazardous Products Do You Use In Your Home?

- ☐ Pest strips
- ☐ Mothballs
- ☐ Insect and roach sprays
- ☐ Motor oils
- ☐ Antifreeze
- ☐ Wood preservatives
- ☐ Car waxes and polishes
- ☐ Rust removers
- ☐ Metal polishes
- ☐ Rug cleaners
- ☐ Deodorizers
- ☐ Degreasers
- ☐ Weed killers
- ☐ Drain cleaners
- ☐ Paint thinners
- ☐ Paint strippers
- ☐ Furniture refinishers
- ☐ Furniture polishes
- ☐ Hobby products
- ☐ Bleaches
- ☐ Gasoline
- ☐ Kerosene
- ☐ Oven cleaners
- ☐ Nail polish remover

If you checked any of these then you have hazardous products in your home.

Common Hazardous Products in Your Home

Product Category	Health Impact	Environmental Impact	Disposal
Solvents	[illegible]	[illegible]	[illegible]
Paints	[illegible]	[illegible]	[illegible]
Pesticides	[illegible]	[illegible]	[illegible]
Household Cleaners	[illegible]	[illegible]	[illegible]
Auto Products	Affects respiratory system, nervous system and skin.	Waste oil is deadly to plants, waterfowl and other wildlife.	Recycle waste oil at most full-service gas stations.

Just Because It's On The Shelf Doesn't Mean It's Safe

As consumers, we often assume that a product must be safe and nonpolluting or it wouldn't be on the supermarket shelf. Actually, many products are unsafe for large segments of our population. Statistics from the National Clearinghouse for Poison Control Centers (1981) show that over 17,000 poison cases were attributed to cleaning and polishing agents. Furthermore, much pollution is caused by the manufacture, use and disposal of consumer products. Some regulations do exist for consumer products, but there are still many products that have no governmental regulations.

Don't let product labels like "organic" or "natural" mislead you. Such words on labels do not necessarily mean the product is safe. For instance, an organic substance is any substance that is made up of carbon and hydrogen molecules such as vegetables, animals, motor oil, turpentine and gasoline. Inorganic substances are not made up of multiple carbon molecules; examples include water, salt, diamonds and battery acid.

All things natural are not safe. For instance, bacteria are natural and some of them can cause illnesses. Burning wood produces smoke that is natural, but some smoke byproducts can cause cancer.

How To Identify Hazardous Household Products

Begin by reading labels. Labels are often incomplete or even misleading, but certain key words can help you determine if a product is hazardous:

- POISON
- CORROSIVE
- CAUSTIC
- VOLATILE
- FLAMMABLE
- EXPLOSIVE

Other key words on labels indicate the degree of that product's toxicity. Toxicity of something is its ability to cause damage to the body.

Remember, though, that less than the fatal dose may cause permanent damage or make you extremely sick.

SIGNAL WORD	Danger	Warning	Caution
TOXICITY			
FATAL DOSE			
EXAMPLES	Weed killer, rat poison		

Choose products that give clear instructions and explain the hazards associated with their use. **Always follow label directions for proper use. If you suspect a poisoning, call the Poison Center or your physician.** First aid recommendations on labels are often misleading or incorrect.

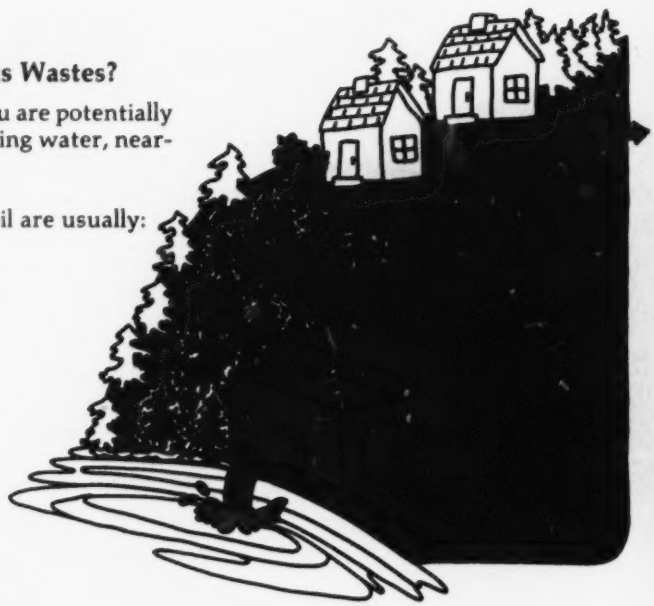
Section 3: Household Hazardous Waste Routes in King County

How Do You Dispose Of Your Household Hazardous Wastes?

If you check any of the following disposal methods then you are potentially contributing toxic pollutants into local groundwater, drinking water, nearby streams and lakes or Puget Sound.

My excess pesticides, used paint thinner and dirty waste oil are usually:

- ☐ thrown in the trash
- ☐ poured in the storm or street drain
- ☐ poured down the toilet
- ☐ buried in the yard
- ☐ poured in a ditch



What will happen if I put my household hazardous waste in the trash?

Residential trash from Seattle and the rest of King County is delivered to transfer stations and then taken to a sanitary landfill.

Hazardous chemicals carelessly tossed in the trash can injure workers who collect refuse from houses or handle it at transfer stations or the landfill. Workers can be exposed to dangerous chemicals, causing immediate injuries or long-term problems.

Some of the liquid wastes that are sent to landfills filter down to the soil. Some of the pollutants will be broken down into less harmful pieces by microorganisms in the soil. Nonbiodegradable pollutants may leach into groundwater that flows to nearby wells, streams, lakes or Puget Sound.

What will happen if I put my household hazardous waste down the toilet or utility sink?

Sewers are a system of underground pipes that transport liquid waste from houses, hotels, stores, office buildings and factories to one of five regional sewage treatment plants in King County. The wastewater is cleaned at the sewage treatment plant.

Much of the waste in sewage is removed by primary or secondary treatment before it is discharged into receiving waters. Some toxic substances, however, pass through the treatment processes while others are broken down or removed.

Sewage treatment plants have been closely studied for pollution concentration because they are major "point source" dischargers of treated wastes. Although industrial discharges appear to be the primary contributors of toxic compounds flowing into treatment plants, recent studies show that "significant portions (of toxic pollutants) in municipal sewage come from non-industrial sources."

Domestic wastes contribute a major amount of water going to treatment plants. It is reasonable to assume that this domestic contribution would contain some proportion of the overall toxicant loading.

What will happen if my household hazardous waste goes to a septic tank?

A septic tank is usually composed of a large underground container and an attached bed of perforated pipes and gravel, called a drainfield. Wastewater sits two to three days in the tank, and bacteria in the tank gradually breaks down many of the wastes. The liquid from the tank is discharged into the drainfield and spreads out into a relatively large area of soil.

The liquid percolates through the soil around the drainfield. Some remaining wastes will be broken down into less harmful pieces by microorganisms in the soil. These systems, however, were not designed to treat toxic substances. Such chemicals may pass through unaltered or upset the system by disturbing the bacteria in the tank. During wet months, bacteria and other pollutants can be carried quite a long way from the drainfield and contaminate lakes, streams or groundwater that might be used as a source of drinking water.

What will happen if the waste is put down a storm drain?

The storm-drainage system collects storm-water runoff from streets, driveways and parking lots and carries the runoff in underground pipes into the nearest creek, river, lake or Puget Sound without being treated.

What will happen if the waste is dumped in a ditch or the backyard?

In some areas, there are no storm drains. Once the soil is saturated, the water runs overland to the nearest ditch or gully and downhill toward the nearest stream.

The waste may filter through the soil into the groundwater and ultimately into an aquifer that empties into a stream or lake in a watershed.

Liquid from your septic tank or the local landfill may filter through the soil in the same way.

In general, the routes for disposal of hazardous substances are limited for the average household. Of the available routes, little is known about the fate of the chemicals that are put into landfills. It appears that some chemicals, when disposed with wastewater, are not completely removed by septic tank systems. Those chemicals that are disposed of via the central sewerage system do consistently show up in sewage, and sometimes in surprisingly high concentrations. Although the frequency and amount of these chemicals entering the waste stream from domestic sources is less than for commercial and industrial ones, they nevertheless contribute to the toxic waste stream.

Section 4: Hazardous Household Products

Solvents

A solvent is a substance that can dissolve another substance. Water is the most common solvent. However, many of the solvents used in homes have an organic rather than a water base. Organic-based solvents are often dangerous to both human health and the environment if used improperly. Organic solvents are used to dissolve or thin oil-based paint, clean brushes and rollers, dilute varnishes and other oil-based products and even—despite the warning to do otherwise—clean our hands.

- A Word About Paints That Contain Solvents
  Significant amounts of organic solvents are found in marine, enamel or primer paints, stains, varnishes, shellacs and lacquers. They should be used and handled properly. Old paints can be particularly hazardous if they were made before federal regulations banned lead and benzene additives in paints. Call the Seattle-King County HAZARDS LINE at 587-3292 or the Poison Center at 526-2121 to find out more about old paints that may contain banned ingredients.

Examples of toxicants in solvents and paints:

- paint thinners (napthene, toluene)
- furniture strippers (methlene chloride, phenols)
- degreasers (mineral spirits, petroleum distillates, chlorinated hydrocarbons)
- nail polish removers (acetone, ethyl acetate, benzene*)
- drycleaning fluids (trichloroethane, petroleum distillates)
- paint brush cleaners (benzene*, toluene, xylene, naphthas)

Products that are made partly of organic solvents include:

- oil-based paints (mineral spirits, petroleum distillates, aromatic hydrocarbons)
- spot removers (perchlorethylene, naphtha)
- rug cleaners (naphthalene, trichloroethane)
- furniture oils (petroleum spirits)
- glues (methyl acetate)
- shoe care products (mineral spirits, trichloroethane).

*Banned or restricted chemicals

Health Problems From Mishandling Solvents

Most organic solvents are poisonous if they are swallowed or if the vapors are inhaled in sufficient quantities. Most solvents also can be absorbed through the skin.

Some health effects may be acute and show up immediately. Others are chronic and take a long time to appear.

Oral Ingestion: Just a small sip of organic solvents such as benzene, gasoline, kerosene, mineral spirits, phenol or turpentine can be fatal.

Skin Damage: Most solvents cause skin irritations because they dissolve skin oils. Solvents can also pass through skin into the bloodstream. This may damage other organs of the body.

Eye Injury: Solvent vapors or splashes into the eye can cause severe damage or even blindness. Soft-contact-lens wearers are particularly susceptible because the lens can absorb chemicals and hold them against the eye until the lens has been removed.

Lung Damage: Because solvents evaporate so quickly it is difficult to avoid breathing them. They can cause nose and throat irritations or damage lung tissue. Solvents can also enter the bloodstream through the lungs, permitting access to other organs in the body.

Liver and Kidney Damage: Prolonged exposure to many solvents can damage the liver and kidneys. These organs remove unwanted chemicals from the bloodstream. Many solvents can destroy liver and kidney cells in the process.

Nervous System Disorders: Inhaling almost any solvent causes some degree of nervous system depression. Symptoms include dizziness, headaches, a "high" feeling, loss of coordination, mental confusion and in severe cases, coma and death.

Environmental Impacts

Unwanted or contaminated solvents dumped down the sink into a septic tank or city sewer, poured down the storm drain, tossed into the trash, or sprinkled on the ground contaminate the environment. These actions send solvents into groundwater, nearby streams or lakes, or Puget Sound.

Organic solvents are toxic to aquatic life even in low concentrations. They are suspected of contaminating groundwater. Solvents also pose an environmental hazard in the atmosphere where they can heighten smog conditions in urban areas. Solvents with chlorinated hydrocarbons resist ordinary breakdown to less harmful components and are very persistent in the environment.

Pesticides and Herbicides

Pesticides are chemicals designed to kill unwanted pests such as insects, rats, weeds and mold. Pesticides are used in homes, yards and gardens. People, however, seldom consider how harmful or fatal they can be to other organisms —including humans.

Examples of toxicants in pesticides and herbicides

- weed killers (2,4-D, 2,4,5-T*)
- slug baits (metaldehyde, dieldrin*, sevin)
- flea powders (carbaryl, dichlorophene)
- wood preservatives (pentachlorophenol*, malathion)
- disinfectants (methyl salicylate)
- insect repellants (DDT*, chlordane*, kerosene, petroleum distillates)
- mothballs (DDT*, methylene chloride, naphthalene)
- pest strips (vapona).

- Banned or restricted pesticides* include:

DDT	DBCP	Pentachlorophenol
Aldrin	Heptachor	Silvex
Dieldrin	Lindane	2,4,5-T
Chlordane	Kepone	Toxaphene.

* These pesticides are now banned from sale or severely restricted in use. They can be disposed of at a Seattle-King County Department of Public Health collection site. Make an appointment to drop them off by calling:

North: 363-4765
Central: 587-3292
South: 228-2620
East: 885-1278 or 623-7160

Health Problems From Pesticide Misuse

A substance whose sole purpose is to kill by poisoning ought to be treated with utmost caution. Under certain conditions, pesticides may be toxic to humans. Some pesticides are much more hazardous than others, and severe illnesses or even death may result when only a small amount of a chemical has been ingested. Other compounds, however, may not produce serious effects even after ingesting large quantities. The combination of dose, length of exposure, route of absorption and toxicity determine the human health impact for each case of pesticide poisoning.

Oral Ingestion: Even a small dose—between seven drops and a teaspoon—of certain pesticides such as aldrin, didldrin, endrin, methyl parathion and parathion can be fatal.

Skin Damage: Many pesticides cause skin irritations or rashes. They can also pass through the skin into the bloodstream and harm other organs.

Eye Injury: Pesticide mists or splashes into the eye can cause severe damage or even blindness. Pesticides can also enter the eye from contaminated fingers. Soft-contact-lens wearers are particularly at risk because the same absorbency that keeps a contact "soft" and supple can also absorb pesticide chemicals from the air.

Lung Damage: Because pesticides are usually applied as a spray, it is impossible to avoid breathing the dangerous mists. Nose and throat may become irritated and pesticides can enter the bloodstream through the lungs.

Liver and Kidney Damage: Prolonged exposure to many pesticides can damage the liver and kidney. These organs remove unwanted chemicals from the bloodstream. Some of the chemicals in pesticides cannot be filtered by either organ and can end up destroying liver or kidney cells.

Nervous System Disorders: Inhaling pesticides can cause headache, dizziness, nausea, severe vomiting, breathing difficulties, convulsions, coma and death—depending on the level of exposure.

Long-term or chronic health effects can result from repeated exposure to pesticides. While little is known about chronic effects, use of proper safety equipment and following application instructions decrease the potential for chronic poisoning.

Environmental Impacts

Pesticides from home use can enter the environment in several ways: direct disposal of pesticides in the trash or sewers; runoff from the land into storm and street drains or nearby streams; drifting of spray mists; evaporation into the atmosphere; accidental spills.

Pesticides seldom kill or repel only that species of animal or plant you wish to eliminate. Many pesticides resist natural decomposition. They can build up in plants, soils and the organisms that feed on these materials. With these small organisms serving as dinner for larger organisms, pesticides move through the food chain and concentrate in the bodies of larger organisms.

Pesticides present in water runoff can also affect non-target organisms. For example, a storm drain loaded with acutely toxic pesticides constitutes a serious health threat to organisms living near the storm drain outfall. Although it is well known that pesticide products are highly toxic to animals and people, long-term environmental effects are less certain. Until the impacts are more completely understood, caution in handling and disposing of pesticides is essential.

Alternative Controls

The best way to avoid the potential dangers of pesticides is to use a less hazardous means of pest control. Some alternative methods to control unwanted pests are:

Natural predators—Allow natural predators, such as ladybugs, to control unwanted pests in your garden.

Preventive care—Pick ripe fruit and vegetables before they start decaying. Water early in the day and avoid sprinkling foliage to reduce chances of rot and mildew.

Physical controls—Set a pan of beer sunk to soil level to attract and drown slugs. Use a strong spray of water to physically knock pests off plants, such as aphids on roses. Provide birdhouses for insectivorous birds. Pull weeds by hand and use a garden hoe instead of herbicides. Squash bugs instead of spraying them. Plant low-growing ground cover to out-compete weeds.

Companion planting—Plants such as those from the onion, garlic and herb families, when planted next to certain other plants, can ward off unwanted garden pests.

Homemade pesticides—Mix your own pesticide sprays to repel pests. Try soap solution, using one ounce per gallon of water; soak bits of tomato leaves in a quart of water; make a solution using hot peppers, onion and garlic. Sprinkle powdered red chili pepper or dried peppermint where ants enter the home. To rid pets of fleas, use cedar chips in their bedding. Hang fly paper instead of pest strips. Pour salt along sidewalk cracks to take care of weeds.

General tips—Maintaining healthy plants will make your garden resistent to most pests. Only spray when it's absolutely necessary. Spray only for the pest that is causing the problem. Spot spray whenever possible.

For publications on alternative controls, see the section on "Resources" at the end of the booklet.

Automotive Wastes

Routine automobile maintenance also generates household hazardous wastes that pose health and environmental problems. Whenever gasoline, oil, antifreeze, brake and transmission fluids, and battery acid are drained from an engine they become toxic automotive wastes. If dumped into a field, down the storm drain or put in the trash, these toxic wastes can contaminate groundwater and threaten fish and wildlife.

Examples of toxicants in automotive products

- gasoline (petroleum hydrocarbons, tetraethyl lead, benzene)
- used motor oil (lead, PAHs)
- antifreeze (ethylene glycol)
- motor oil (TCP)
- auto battery (sulfuric acid)

Health Problems From Automotive Wastes

Automotive wastes are primarily an environmental hazard, although human and animal health are also threatened when many of these wastes are drunk, inhaled or absorbed through the skin.

Oral Ingestion: Accidental drinking of gasoline, antifreeze, kerosene or battery acid is very dangerous.

Skin Damage: Prolonged skin contact with gasoline can cause blistering and skin ulcers. Only a small splash of battery acid can burn and eat through skin if not rinsed immediately.

Eye Injury: Injuries from automotive wastes splashing into the eye can range from slight irritation to blindness.

Lung Damage: Gasoline fumes can cause severe respiratory injury as well as nose and throat irritations. Toxic chemicals can also enter the bloodstream via the lungs. Inhaling high concentrations of gasoline containing certain additives can even lead to respiratory failure and death.

Liver and Kidney Damage: These organs are often targets for toxic chemicals because their job is to filter impurities from the bloodstream. A common gasoline additive may cause injury to both liver and kidneys if inhaled.

Nervous System Disorders: Gasoline that is inhaled or absorbed through skin can cause irritability, headache, dizziness, loss of appetite, vomiting, convulsions, coma and death.

Environmental Impact

Only about half of the 2.25 million gallons of lubricating oil that do-it-yourself mechanics drain in their garages each year in Washington is recycled. The other one million gallons are either sprinkled in the backyard, poured down the storm drain or tossed into the trash. Other auto wastes are similarly dumped. Waste oil also enters the environment from storm- and surface-water runoff. Waste oil has the greatest environmental impact of all automotive products because it's insoluble and persistent. Oil sticks to everything from beach sand to bird feathers. It floats on and pollutes our waterways. It is slow to degrade and evaporate. When burned, it fouls the air. A small amount seriously contaminates large quantities of drinking water.

Long-term exposure to petroleum pollution can interfere with the feeding and reproduction of aquatic creatures. Edible marine organisms may accumulate toxic or carcinogenic compounds in their systems.

Less is known about the environmental impact of non-petroleum-based auto products. Both antifreeze and brake fluid appear to be relatively harmless in the environment if disposed of properly. Antifreeze, however, is poisonous in its concentrated form and has a sweet taste that attracts animals. Many pets and other wildlife die after drinking from puddles of antifreeze in driveways.

Household Cleaners

Household cleaners and polishes scour your sinks, sanitize the bathtub tiles, disinfect toilets, make windows sparkle, shine the furniture, soften fabric and lift dirt from clothes. Many of these common household cleaners contain toxic substances and can be hazardous to your health if used carelessly or improperly.

Examples of toxicants in household cleaners:

- denture cleaners (sodium perborate)
- furniture polishes (aromatic petroleum solvents)
- bleaches (sodium hypochlorite, oxalic acid, sodium perborate, sodium peroxide)
- coffee pot cleaners (tripolyphosphate, sodium perborate)
- detergents (sodium carbonate, trisodium phosphate)
- automatic dishwasher detergents (trisodium phosphate)
- drain cleaners (solid—sodium or potassium hydroxide; liquid—hydrochloric acid)
- oven cleaners (potassium or sodium hyroxide, methylene chloride, petroleum distillates)
- toilet bowl cleaners (solid—sodium acid sulfate, sodium acid oxalate; liquid—hydrochloric acid, chlorinated phenols).

Cleaners do not consist of one easily identified chemical. They are mixtures of complex and often unnamed synthetic compounds. Within each type of product, different formulations exist for specific uses and each brand.

Health Effects From Misuse of Cleaners and Polishes

Cleaners and polishes do their job so effectively because they contain strong chemicals. Many are immediately poisonous, or accumulate to toxic levels in people, fish or wildlife. Others may accumulate to toxic levels over time. Accidental ingestion, breathing fumes or skin and eye contact with these products can result in injury or even death.

Cleaners present more of an acute *human* toxicity concern through widespread household use rather than an environmental problem in disposal. Specific dangers from exposure are difficult to define because most chemicals in household products have not been thoroughly tested for their effects on humans and because each cleaner is different.

As with pesticides and solvents, some health effects appear immediately after exposure (such as rashes, nose and throat irritation, nausea, etc.) while others take a longer time and repeated exposure to develop. Furthermore, health problems depend on the type of chemicals in the cleaner or polish, the dose the person is exposed to, the length of exposure and the physical makeup of the victim.

An Oregon study revealed that women who work at home had a 54-percent higher death rate from cancer than those who worked at jobs away from the home. The study suggested that this higher rater might be attributed to chemicals in household products (D.L. Dadd, *Nontoxic and Natural*, page 64).

Environmental Impacts

Cleaning products are more likely to enter the environment through everyday use—down drains and storm sewers, in the trash, and from evaporation—rather than from improper disposal. These products can accumulate to toxic levels in fish and wildlife and contribute to air and water pollution if disposed of improperly. Most cleaners are not a problem through normal use. Once diluted in wastewater the chemicals degrade rapidly.

Cleaners and Polishes That Are Generally More Hazardous

Air Fresheners. Most air fresheners and deodorizers work by either desensitizing your sense of smell, coating your nasal passage with an oil film or masking the unpleasant odor with another odor.

The chemicals are released into the environment with little known about their health and environmental effects.

Bleach. Chlorine bleaches are extremely reactive. **Never mix bleach with ammonia** or other cleaning products unless the label specifically allows it. Toxic gases result when chlorine bleach is added to ammonia and to acidic products such as some drain, toilet bowl and metal cleaners. These toxic fumes have killed people.

Rug and Upholstery Cleaners, Dry Cleaning Fluids. Many of these products contain chemical solvents, some of which are extremely flammable. Others cause skin and eye irritations and other damages to health when enough is breathed or ingested.

The solvents in these cleaners dry easily, but the vapors still linger in the air and are inhaled unless there is good ventilation and fresh air. When using such products, be sure to have the windows open and as much fresh air circulating as possible.

Detergents. Detergents have garnered much attention as water pollutants because of the phosphates in some laundry products—especially in automatic dishwashing detergents. Some of the chemicals used to replace the phosphates are caustic and pose more of a human health hazard when accidentally ingested than high phosphate detergents.

Various types of chemicals are present in laundry products. Some contain enzymes that can cause allergic irritations to sensitive people. Many contain perfumes and optical brighteners. To reduce the release of such chemicals to the environment, detergents should be used conservatively and for full loads of clothes and dishes.

Disinfectants and Pesticides. Disinfectants contain strong chemicals whose long-term health effects are not known but are suspected of being potentially harmful. Disinfectants should be used conservatively and with caution, especially spray disinfectants that disperse these toxic chemicals in the air and are then easily inhaled.

Drain Openers. Drain openers are highly corrosive and should never be allowed to splash or touch skin or eyes. Should this happen, rinse the exposed area for 10-15 minutes with water and call the Poison Center or physician.

Drain openers should never be mixed with another brand or with bleach to avoid possible chemical reactions that will release toxic, possibly lethal, fumes. Consider using a mechanical means of opening the drain first. Avoid adding a drain opener to a toilet bowl that contains toilet bowl cleaners.

Oven Cleaners. Oven cleaners contain very strong, corrosive chemicals. If oven-cleaning products come into contact with skin, eyes and breathing passages, they can cause severe damage.

Fine mists of these caustic oven cleaners are produced by aerosol sprays, and they can easily penetrate into and damage lung tissue when breathed. Avoid aerosol oven cleaners by using the new pump sprays or solid oven cleaners.

Section 5: Safety Considerations If You Must Use Hazardous Products

General Warnings For Use of Household Hazardous Waste

If you must use a hazardous product, keep in mind certain safety practices:

- Always read the label and heed its directions and warnings.
- Keep unused products in their original containers and store in a safe place out of the reach of children.
- Don't overuse a product. Twice as much does not work twice as well. Follow dilution instructions carefully.
- Never mix different products or different brands of the same product. Poisonous or explosive chemical reactions may result.
- Wear protective equipment such as glasses, goggles, gloves or respirators with interchangable cartridges if the product is harmful to eyes, skin or lungs. Safety equipment can be found in stores specialized to provide these products. Consult the yellow pages of a telephone book under the category, "Safety Equipment," for the outlet nearest you.
- Use proper ventilation if you must use hazardous products indoors. Use fans to send air from your work area to an open window.
- Avoid skin and eye contact.
- If pregnant, try to avoid exposure to chemicals. Many chemicals in household products have not been tested for their effect on unborn children. Even "safe" chemicals can be unsafe when you are exposed to other chemicals at the same time.
- Post the Poison Center number (526-2121) and other emergency numbers by your phone and tell other household members where they are.
- Keep a 1-ounce bottle of Syrup of Ipecac, used to induce vomiting, on hand. Never use it without the recommendation of the Poison Center or a physician.
- First aid information on labels can be misleading or incorrect. Call the Poison Center for the most up-to-date information.

Precautions When Using Solvents and Paints

- Avoid wearing soft contact lenses.
- Use outdoors on windless days, if possible.
- Always clean paint brushes immediately after use.
- Use water-based (latex) paint whenever possible.

Precautions When Using Pesticides

- Avoid wearing soft contact lenses.
- Avoid using pesticides near food or water bodies.
- Avoid spraying on windy days.
- Use a short-lived pesticide instead of a long-lasting one when it will do the job.
- Keep pets away from areas where pesticides recently have been applied because pets may track pesticide residues into your home.

Precautions When Using Automotive Products

- Dumping waste oil into sewers, storm drains or any body of water is illegal. Recycle them at a local service station.
- Never store gasoline or other flammable and volatile products inside your home. Keep in a garage or outbuilding where the ventilation is good.

Special Risks

Exposure that has not harmed you is not necessarily harmless to others. Certain segments of our population are more susceptible than others to harm from the hazardous chemicals contained in household products. Keep pets, children and elderly people out of the area where hazardous chemicals are being used.

The dose at which an adverse health effect from toxic chemical exposure occurs is different for every person. Age, weight, sex and health of the individual, as well as any exposure the victim has had to other toxic chemicals, all interact to determine that person's tolerance.

Children under five are naturally curious and cannot read label warnings. This group runs the greatest risk of accidental poisoning. Children are also generally more susceptible than most adults to small amounts of toxic material because their body defenses are not completely developed, their lung passages are small, their rapidly growing tissues are easily damaged by poisons and because of their low body weight. Exposure of pregnant women to even small amounts of many chemicals can damage the fetus.

Other high risk groups include people with chronic heart, lung, kidney or liver disease, people with allergies and the elderly.

Even though many common human-made chemicals currently appear harmless, scientists are concerned about the unknown long-range effects of low-dose exposure.

To protect yourself and other household members, respect the dangers of hazardous products. Use them safely and sparingly.

Reducing The Use Of Hazardous Products

Hundreds of labor-saving products are directly and indirectly used daily by most Americans. Could we live without these products? Certainly, but many of us choose to benefit from their time and work-saving features. We cannot, however, avoid the responsibility of using and disposing of these products in a responsible way if we choose to enjoy their benefits.

We have much more control over our exposure to toxicants than we think.

Several methods exist to eliminate or reduce the need for hazardous household products. A myriad of truly natural and nontoxic products are commercially available but often difficult to find in major shops or stores.

A new guidebook, *Nontoxic and Natural,* examines hundreds of product categories in alphabetical order and lists nontoxic, brand-name products to look for in your local stores or products to order by mail. Further, just by asking how household tasks were done before synthetic cleaning chemicals became prevalent generally reveals a common and more gentle substitute (like baking soda or vinegar) you already have on your shelf. Other substitutes are being developed by chemical research companies.

When buying products, always compare labels for warnings and ingredients. A less toxic product may serve the purpose.

Keep in mind that the label signal words "danger, warning and caution" indicate decreasing degrees of toxicity and help you to identify the least-hazardous products. You can also watch for special interest magazines featuring alternative household products and methods to use.

Old products should be handled with particular care. Often they contain very toxic chemicals that are no longer allowed to be sold. Every effort should be made to handle these products with extra caution and remove them from the home.

Once you've eliminated the worst of the household polluters, maintaining a relatively healthy home is primarily a matter of awareness.

Alternatives To Commercially Available Products

DO YOU USE	TRY
Glass Cleaner	2 tablespoons of vinegar to 1 quart of water.
Oven cleaner	Pour lots of salt on fresh spills in the oven and scrape them off after the oven cools. A water solution of baking soda will remove grease. Paint ammonia on spills with a paint brush.
Refrigerator deodorizer	Baking soda. Keeping a refrigerator clean will prevent strong smells from developing.
Air freshener	Use vinegar in an open dish or open a window.
Chlorine scouring powder	Use a non-chlorine powder or baking soda.
Drain cleaner	Plunger followed by a handful of baking soda with ½ cup vinegar; cover drain and let sit for 15 minutes followed by two quarts of boiling water.
Mothballs	Cedar chips enclosed in cotton sachets. Keep only clean clothes in closet.
Toilet bowl cleaner	Scouring powder.
Household detergents	Simple soap.
Tile cleaner	Baking soda.
Bleach	Borax.
Stain remover	Rub with cornstarch paste, brush off when dried.
Disinfectant cleaner	Ammonia.
Mildew-stain remover	Vinegar solution.
Coffeepot cleaner	Vinegar solution.

In many cases, cleaning chemicals can be replaced by simple soap, baking soda, vinegar, ammonia, washing soda and borax that are less expensive and usually just as effective—ask your grandparents!

Section 6: Disposal Recommendations

General Recommendations

- Recycle wastes whenever possible. Instead of throwing them away, find a friend, neighbor or business who can use up excess products. Reuse and recycling are always preferable to sending something to a hazardous waste landfill.
- Before disposing of products containing harmful chemicals, call the HAZARDS LINE to find out the safest method of disposal (587-3292).

Solvents and Paints

- Reuse turpentine and brush cleaner by letting them set in a closed jar until paint particles settle out. Then strain off the usable solvent. Wrap the remaining paint sludge in newspaper and discard in trash.
- If there is less than one quart of paint or solvent to dispose of, let the liquid evaporate outdoors in a wide-mouth container, away from children and pets.
- Take excessive amount of solvents to chemical reprocessing companies such as Chemical Processors Inc. or Northwest Enviro-Service Inc.

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Pesticides

- All pesticides are toxic to some degree. Never dump them in the sewer, storm drain, septic tank, garbage can or on the ground.
- Take all banned pesticides and those excess, still-usable pesticides that you cannot give to a neighbor or business to the nearest pesticide collection site operated by the Seattle-King County Department of Public Health. Call first:

  South: 228-2620
  East: 885-1278 or 623-7160
  North: 363-4765
  Central: 587-3292.
- Triple rinse empty pesticide containers, using the rinse water as pesticide. Then wrap the empty container in newspaper before putting it in the trash.
- Wood preservatives contain fungicides and other pest-control compounds, so they should be disposed of just like other pesticides.

Automotive Wastes

- Drain waste oil into a container with a tight-fitting lid. Take it to your local service station that accepts waste oil to be recycled.
- Call the recycle hotline (1-800-RECYCLE) for directions to the station nearest you.
- Uncontaminated gasoline should be used up.
- Contaminated gasoline should be taken to a chemical reprocessing firm.
- Antifreeze and brake fluid disposal depends on whether you live on the central sewerage system or on a septic tank. If your home is connected to the central sewerage system, flush antifreeze and brake fluid down the toilet or wash down the drain followed by at least three gallons of water. Never pour antifreeze down a storm drain. If your home uses a septic tank, pour antifreeze and brake fluid onto a porous surface, e.g sandy soil away from pets and storm or street drains.

Household Cleaners and Polishes

- Use up the product following label directions. If you can't use it, give it to a friend or neighbor who can.
- Call the HAZARDS LINE at 587-3292 if you have products containing banned chemicals.
- Consider using nontoxic products as alternatives to hazardous products.

Other Products

Call the HAZARDS LINE for disposal information about miscellaneous products such as pool chemicals, hobby supplies, old chemistry sets, mercury, old medicines, etc.

Section 7: What You Can Do About Household Hazardous Waste

Seattle-King County residents are fortunate to have ongoing pesticide and hazardous waste collection systems that are provided as public services. There is also the HAZARDS LINE that will answer questions about household hazardous waste and offer the safest recommendations for disposal. Yet many residents do not take advantage of these services because they are unaware of the problem.

As a concerned citizen you can start by learning the facts. A group of concerned citizens can serve as the spark to ignite community awareness and proper disposal of household hazardous waste. Several citizen and environmental groups in King County that you may want to join are already active in this area (see "Resources" for names of local groups).

You may wish to form a neighborhood group of your own. Your group could help get the word out that there are proper and legal ways to dispose of wastes and that we must accept the responsibility to properly manage them. You could ask your local library to feature a shelf on household hazardous waste and alternative products and also display Metro's household hazardous waste posters.

Many other actions can be taken by neighborhood groups. These include:

- Distribute brochures or copies of this booklet among neighbors.
- Remind local service stations and other major automotive oil distributors that state law requires them to post signs encouraging recycling and telling where the closest recycling site is located.
- Sponsor guest speakers to talk to local clubs and groups.
- Arrange workshops on household chemicals.
- Remind friends and relatives of the benefits of recycling.
- Coordinate a once-a-month free drop-off site for recyclable products.
- Work with your local government to organize an annual collection day in your area for hazardous products.
- Write letters to your legislators at both the state and federal levels explaining the issue of hazardous household wastes and why you are concerned.

The More You Know, The Safer You Feel

You might have the impression that the household hazardous waste situation is not very hopeful, since many of us are unable—or unwilling—to stay away from hazardous products.

This booklet is not meant to suggest that you should never again touch any of the products mentioned here. Rather, the booklet was written to supply you with the information needed to help you recognize substances that may pose a hazard, help you make informed choices at the market, and help you make conscious decisions about safe use and disposal of household products.

It's your responsibility to limit your exposure to whatever degree is possible and practical. With this knowledge, you can do your best for yourself and your environment.

Are You A Household Hazardous Waste Quiz Whiz?

True or false:

1. If a product is on the supermarket shelf then it must be safe to use.
2. Common household products can sometimes injure you.
3. It is illegal to use rat poison as slug bait.
4. Common household products can contain dangerous chemicals.
5. Pouring waste motor oil down a street drain is illegal.
6. Paint thinner should be sprinkled on the ground.
7. Pesticides can be absorbed throught the skin in minutes.
8. Toxic means poisonous.
9. Wood preservatives are considered pesticides.
10. For information on disposal of hazardous products you should ask your grandmother.
11. Antifreeze attracts pets because of its sweet taste.
12. Chemical pesticides are the only way to control unwanted pests.
13. Extra paint should be given to someone who can use it rather than discarding it.
14. A number of substitutes for hazardous products exist.
15. Reading a product label is a waste of time.

Answers:

1. f	6. f	11. t
2. t	7. t	12. f
3. t	8. t	13. t
4. t	9. t	14. t
5. t	10. f	15. f

Section 8: Resources

Emergency	Poison Control Center 526-2121 1-800-732-6985	Emergency first aid for accidental or suspected poisonings.
	Department of Ecology 4350 150th Ave. N.E. Redmond, WA 98052 885-1900	Enforces state environmental regulations. Responds to spills and illegal dumping. Recommendations for disposal of some household toxicants.
Federal Agencies	Consumer Products Safety Commission 909 First Ave. Seattle, WA 98104 442-5276 1-800-638-2772	Questions about labels or banned items.
	Environmental Protection Agency 1200 Sixth Ave. Seattle, WA 98101 442-1200	Regulations on hazardous waste management. Sets standards and enforces federal environmental regulations.
	U.S. Occupational Safety and Health Administration 121 107th N.E. Bellevue, WA 98004 442-7520	Sets standards for safe exposure to hazardous chemicals in the workplace.
State, Regional and Local Government Agencies	Bellevue Storm and Surface Water Utility P.O. Box 90012 Bellevue, WA 98009 453-4895	Responds to hazardous waste spills and illegal dumping in Bellevue city limits. Recommendations on disposal of household toxicants.
	Municipality of Metropolitan Seattle 821 Second Ave. Seattle, WA 98104 447-6597	Water pollution control agency for the Seattle-King County region. Coordinates Household Waste Program. Recommendations on disposal of household toxicants.
	King County Co-operative Extension 312 Smith Tower Seattle, WA 98104 344-3900	Information about pesticides, alternative agricultural and household methods and products.
	Seattle-King County Department of Public Health 172 20th Ave. Seattle, WA 98122 587-3292 HAZARDS LINE 587-3292	Enforces health regulations. Runs pesticide collection program and coordinates Household Hazardous Waste Program, including the HAZARDS LINE. Recommendations on safe use and disposal of household toxicants.

Citizens Groups and Environmental Organizations	League of Women Voters 1402 18th Seattle, WA 98122	Information on hazardous waste and other issues.
	Puget Sound Alliance P.O. Box 30843 Seattle, WA 98103	Monitors information on local agencies with responsibility for protecting Puget Sound.
	Seattle Audubon Society 619 Joshua Green Bldg. Seattle, WA 98101	General information on local hazardous waste issues. Newsletter available.
	Washington Environmental Council 80 S. Jackson St. Suite 308 Seattle, WA 98104	Information on state hazardous waste issues and regulations. Newsletter.
	Washington Citizens for Recycling P.O. Box 2449 Seattle, WA 98111	Information on recycling, including waste oil. Newsletter.
	Washington State Office of Environmental Education 2000 N.E. Perkins Way Seattle, WA 98155 365-0433	Distributes educational curricula on many issues, conducts workshops, gives presentations, has resources for checkout.
	Western Washington Toxics Coalition 4512 University Way NE Seattle, WA 98105	A coalition of groups and individuals interested in hazardous waste and alternatives to pesticides. Newsletter.

For More Information

A Hazardous Waste Primer. League of Women Voters Education Fund, 1730 M Street NW, Washington, D. C. 20036. Pub. #402 ($0.75).

1984 Annual Report of the Puget Sound Water Quality Authority. Washington Department of Ecology, PV-11, Olympia, WA 98504.*

Artist Beware. Michael McCann. (New York: Watson-Guptill Publications, 1979). Check with the publisher or local library.*

Clinical Toxicology of Commercial Products. R. E. Gosselin, H. C. Hodge, R. P. Smith and M. N. Gleason (Baltimore: Williams and Wilhims, 1976). Look in the library for this one.*

Getting The Bugs Out: A Guide To Sensible Pest Management In And Around The Home. National Audubon Society, 950 Third Ave., New York, New York 10022.

"Household and Garden Pesticide Safety," Seattle-King County Department of Public Health, 172 20th Ave., Seattle, WA 98122.*

"Household Cleaners and Polishes: Chemical Hazards in the Home." Nitsa Benson. University of Wisconsin Cooperative Extension.*

Household Hazardous Waste: Solving the Disposal Dilemma. Gina Purin. Golden Health Empire Health Planning Center, 2100 21st St., Sacramento, CA 95818.*

Integrated Pest Management Common Sense Pest Control Quarterly. P.O. Box 7417, Berkeley, CA 94707.

Nontoxic and Natural: How To Avoid Dangerous Everyday Products and Buy or Make Safe Ones. Debra Lynn Dadd. Nontoxic Lifestyles Inc., Box 210019, San Francisco, CA 94121.*

99 Ways To A Simple Lifestyle. Center For Science In The Public Interest. (Garden City, New York: Anchor Books, Anchor Press/Doubleday, 1977).

The Household Pollutants Guide. Albert Fritsch. (Garden City, N.J.: Anchor Press/Doubleday, 1978). Out of print, check with the library.*

The Natural Formula Book For Home and Yard. Dan Wallace. Rondale Press, 33 East Minor St., Emmaus, PA 18049.

The Product Safety Book. Stephen Brobeck and Anne Avery. Consumer Federation of America, Dept. EPD, 1214 Fourteenth St. NW, Washington, D.C. 20005

Hazardous Products Equal Hazardous Waste (brochure), Metro, 821 Second Ave., Seattle, WA 98104. Seattle-King County Department of Public Health, 172 20th Ave., Seattle, WA 98122.

Water and Wastes Engineering. "Toxic Control—The Trend of the Future." G. W. Foess and W. A. Ericson. 1980.*

Why Your Home May Endanger Your Health. Alfred Zamm with Robert Gannon. (New York: Simon and Schuster, 1980).*

Metro's Household Hazardous Waste Disposal Project reports:

Summary Report. Metro. 1982.*
Toxicants in Consumer Products. Metro. 1982.*
Public Opinions and Actions. Metro. 1982,
SLEUTH: Educational Activities. Metro. 1982.
Directory. Metro. 1982, updated 1985.*

Available from Metro, M.S. 81, 821 Second Ave., Seattle, WA 98104.

*Booklet uses these references.

Emergency Action For Poisoning

Inhaled Poison

Immediately get the person to fresh air. Avoid breathing fumes. Open doors and windows wide. If victim not breathing, start artificial respiration.

Poison on the Skin

Remove contaminated clothing and flood skin with water for 10 minutes. Then wash gently with soap and water and rinse.

Poison in the Eye

Flood the eye with lukewarm (not hot) water poured from a large glass 2 or 3 inches from the eye. Repeat for 15 minutes. Have patient blink as much as possible while flooding the eye. Do not force the eyelid open.

Swallowed Poison

MEDICINE: Do not give anything by mouth until calling for advice.

CHEMICAL OR HOUSEHOLD PRODUCTS: Unless patient is unconscious, having convulsions, or cannot swallow—give milk or water immediately—then call for professional advice about whether you should make the patient vomit.

Always keep on hand at home a 1-ounce bottle of Syrup of Ipecac for each child or grandchild in the home. Use only on advice of poison center, emergency department or a physician.

After the Emergency Actions, CALL:

SEATTLE POISON CENTER **526-2121** **1-800-732-6985**

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